

Abstract of the Invention

In the world of high speed communications where the use of return-to-zero modulation format is advantageous, there is a need for being able to exert
5 electrical control, in a relatively simple manner, over the duty cycle of the optical pulses being generated without the undesirable effects of chirp, whilst providing good extinction between pulses. The invention proposes an optical pulse generator and methods of generating and shaping optical pulses using an arrangement of cascaded Mach-Zehnder type interferometers. The pulse
10 generator has a signal generator that produces sinusoidal electrical modulation signals for application to the electrical inputs of cascaded Mach-Zehnder type interferometers. The first Mach-Zehnder type interferometer in the series is responsive to the sinusoidal electrical modulation signal being applied, to generate a series of optical pulses having controllable chirp. Each
15 successive Mach-Zehnder interferometer is responsive to the sinusoidal electrical modulation signal being applied, to shape the series of optical pulses that are input to it from the previous Mach-Zehnder type interferometer, and produce an output train of optical pulses having a duty cycle that is dependant on the waveform of the electrical modulation signal
20 being applied to at least one of the Mach-Zehnder type interferometers. The frequency of the sinusoidal electrical modulation signal that is applied to each Mach-Zehnder type interferometer is substantially the same.